Programmed cell death processes in *Saccharomyces cerevisiae* are altered by *GUP1* deletion.

Joana Tulha, Fábio Faria-Oliveira, César Costa, Cândida Lucas, Célia Ferreira

Centre of Molecular and Environmental Biology (CBMA), Department of Biology, University of Minho, Campus de Gualtar, 4710-057 Braga, Portugal; Phone: +351253604313, Fax: +351253678980.

During the past years, yeast has been successfully established as a model to study mechanisms of programmed cell death regulation. *Saccharomyces cerevisiae* commits to cell death showing typical hallmarks of metazoan apoptosis, in response to different stimuli. Gup1p, an *O*-acyltransferase, is required for several cellular processes that are related to apoptosis development, such as rafts integrity and stability, lipid metabolism including GPI anchor correct remodeling, proper mitochondrial and vacuole function, bud site selection and actin dynamics. We used two known apoptosis inducing conditions, chronological aging and acetic acid, to assess several apoptotic markers in *gup1*Δ mutant strain.

We found that this mutant presents a significantly reduced chronological life span, comparing to Wt and it is also highly sensitive to acetic acid treatment. Although both chronological aging and acetic acid lead to identical effects, the differences between the strains in the levels/types of apoptotic markers are notorious. In addition, ROS levels of *gup1*Δ mutant strain were extremely high. According to our results, cells lacking *GUP1* seem to be incapable of undergoing apoptosis. Instead this mutant appears to be experiencing a necrotic cell death process.

Gup1p has been described to have an important function on lipid rafts assembly/integrity as well as on cell lipid profile. On the other hand, in the literature, rafts have been increasingly implicated on apoptotic signaling. The present results reinforce such idea.

Fábio Faria-Oliveira is supported by a PhD grant from FCT, Refª SFRH/BD/45368/2008. This work was financed by FEDER through the COMPETE (Programa Operacional Factores de Competitividade), national funds through FCT PEst-C/BIA/UI4050/2011 and by FCT fellowship (SFRH/BPD/65003)

.